

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project

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TITLE

SURVEY OF BLACK HILLS BEETLE INFESTATION
IN PONDEROSA PINE, DIXIE NATIONAL FOREST, UTAH
FALL OF 1950

By

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Introduction

During the 10-year period 1935-1944 a total of nearly 50,000 ponderosa pine trees infested with the Black Hills beetle, Dendroctonus ponderosae, were treated on the Dixie National Forest. Over four-fifths of this control work was done in the East Fork of the Sevier drainage on what was then called the Powell National Forest. For several years following this period there was very little beetle activity but in the fall of 1949 forest officers reported that red-topped trees were becoming more numerous again.

Much of the ponderosa pine in the East Fork of the Sevier drainage is mature or overmature and many of the trees are infected by limb rust. Some of the area has been selectively logged but even the remaining stand is not very vigorous. The timber is valuable as a source of supply for local mills and also as watershed cover. Past history and present stand conditions indicate that the Black Hills beetle will continue to be a serious problem in the area. Plans should be made for annual maintenance control work rather than allowing extensive infestations to build up before control measures are applied.

1950 Surveys

Aerial reconnaissance flights were made by Bert H. Tucker and L. W. Orr on June 25 and August 6, 1950. As a result of these flights, following several ground examinations earlier in the season, it was decided that an intensive survey was needed in the East Fork District and in the Bower Flat area of the Navajo Lake District. This ground survey was conducted during the month of September.

Survey Procedure

A crew of four men, including C. J. Hay as chief of party, ran a 5% survey on all units except Red Canyon where a 2 $\frac{1}{2}$ % cruise was used. A 1/5th acre circular plot was taken every 2 chains. All lines were run in cardinal directions and were tied in with known section corners.

A sample of 3,023.6 acres was taken on a total area of 61,156 acres. This acreage contains 3,900 new attacks or 0.064 attacks per acre. A total of 378 miles of line was run, giving 4.9 miles per man day or 785 acres per man day. On the following pages the survey data are divided into units. (See also summary tables and maps).

Discussion by Units

No. 1 - Bower Flat

This unit includes the area along the road between Mammoth Creek and Duck Creek. An area of 13,380 acres was surveyed, resulting in an estimate of 320 trees attacked by the Black Hills beetle in 1950. About 300 of these trees occur on about 7000 acres within the larger area surveyed. Most of these trees occur as singles but there are a few small groups of 4 or 5 infested trees. Many of these trees were weakened by limb rust previous to attack by the beetles.

100 percent coverage for spotting should not be necessary in the Bower Flat unit. If the control work is done early in the spring it should be possible to find most of the 1950 attacks by examining all the green trees within a radius of about 2 chains from red tops (1949 attacks). A better procedure may be to wait until the last week in June and first half of July when the infested trees should be faded sufficiently to be detected from a distance.

Most of the infested trees will be quite easily accessible but many are too large to be sprayed effectively without felling them. It may be feasible to salvage some of these trees by having them cut and taken to a mill before time for beetle emergence. The slabs must be burned.

The southwestern pine beetle (Dendroctonus barberi) is also present in this unit. A total of about 200 red tops infested only by D. barberi are scattered throughout the area. Red tops containing mixed D. barberi and Black Hills beetle attacks were tallied under the latter heading. D. barberi infested trees that are located where they can be salvaged should be cut and taken out. Control of this insect by spraying infested trees with the ortho-fuel oil mixture may not prove effective, because the larvae feed within the bark instead of beneath it as does the Black Hills beetle. Spraying tests are planned for the spring of 1951 and we may obtain further information in time to make further recommendations during the course of the project.

No. 2 - Blue Fly Creek

This unit includes the area between Ahlstrom Hollow and the ridge north of Badger Creek. Type is found throughout this unit except for small "breaks" areas and detritus slopes where only scrubby limber pine is found.

Approximately 13,800 acres are recommended for treatment. About 1,860 new attacks were estimated for this area, or 0.135 tree per acre. The attacks are quite aggressive and appear to be definitely on the increase. About 140 red tops containing D. barberi were found in this unit.

In the area between Blue Fly Creek and King Creek there are about 120 infested stumps. These trees were logged early in the summer of 1950. When infested stumps are found near trees that are to be sprayed it will be advisable to spray the stumps also.

Groups of infested trees are common throughout this unit. A 100% coverage in spotting and treating is recommended. Part of the infested trees can be removed by logging operations in this area. The slabs must be burned before time for beetle emergence.

No. 3 - Dave's Hollow

This unit includes the area between the East Fork of the Sevier River and Bryce Canyon National Park boundary. It is bounded on the north by Dave's Hollow Ranger Station and extends south to just below the Kanab Creek drainage. The unit is in type throughout except for parks and meadows.

Approximately 14,940 acres are recommended for control. An estimate of 1,300 new attacks was made for this area, or 0.087 tree per acre. Here again the attacks are aggressive. Groups of three or more infested trees are quite common, especially in the western half of the area. Near the national park boundary there are only scattered singles. A 100% spotting and treating coverage is recommended.

It should be possible to remove about half of the infested trees in this unit by logging.

No. 4 - Skunk-Badger Creek

This unit includes 3,240 acres extending south from the ridge north of Badger Creek toward Skunk Creek and west from the East Fork of the Sevier River. Type is found on the ridge and north facing slope. In some spots the type is predominately Douglas or white fir or limber pine. Type is interrupted on the south facing slope by breaks.

The area contains an estimated 320 new attacks or 0.099 tree per acre. Most of the infested trees occur as singles. The unit can be spotted 100% or hot spotted, depending upon when the work is done.

One heavily infested limber pine was tallied on a plot. Infested limber pines should be treated.

No. 5 - Skunk Creek

The unit is a narrow strip $\frac{1}{2}$ mile wide extending about 3 miles west from the river from a point half way between Skunk and Blubber Creeks.

Since no new attacks were found and only one red top was tallied, this unit shows an endemic condition. If any new red tops show up in July they should be treated.

No. 6 - Kanab-Blubber Creek

This unit includes about 3,524 acres of ponderosa pine type in the Blubber and Kanab Creek drainages. There is one small blow-down area on a side drainage of Blubber Creek where there are at least 12 windfall trees that are infested and should be treated. This blow-down is readily accessible by truck. There are a few scattered infested trees in this unit that should be treated after they fade late in June or early in July.

No. 7 - Podunk

7,496 acres south of Podunk Guard Station comprise this unit. This acreage extends from Upper Kanab Creek to the National Park boundary and also includes a narrow strip running up Robinson Canyon. The unit contains 1,824 acres of non type due to parks, meadows, spruce, fir, aspen and limber pine.

Only 4 infested trees were found on plots on this large unit and one of them was marked to be cut. Logging operations are now active in Robinson Canyon. An effort should be made to remove or treat the few infested trees that will fade late in June or in July 1951.

No. 8 - Red Canyon

A $2\frac{1}{2}\%$ cruise covered 1,368 acres of ponderosa pine in an area south of the highway from a point at the upper end of the canyon.

No new attacks were found in this unit.

Dixie N. F.
1950 Survey Summary
for Control Units

Unit	Unit Area	New Attacks Per Acre	Estimated New Attacks	* S.M.E.	Recommendations
	Acres				
Blue Fly	13,800	.135	1,860 ± 378	20.3 %	100% spotting Treating and salvage logging
Dave's Hol.	14,940	.087	1,300 ± 605	46.5 %	100% spotting Treating and salvage logging
Skunk- Badger Cr.	3,240	.099	320 ± 130	40.7 %	100% spotting and treating
East Fork TOTALS	31,980	.1088	3,480 ± 678	19.5 %	
Bower's Flat	13,380	.0239	320 ± 110	34.0 %	Spotting and treating or salvage logging after trees fade
Dixie N.F. TOTALS	45,360	.0838	3,801 ± 739	19.4 %	

* Sampling error in percent.